

CLAIMS

1. A method of conducting R chemical reactions, where $R > 1$, in a system which includes an apparatus which provides energy for the chemical reactions, said system also
- 5 including a parameter selecting unit having a user interface and storage means for carrying a database, said chemical reaction involving one or more chemical species XB and resulting in a reaction product XD which includes a functionality δ , where the chemical reaction involves one or more functionalities β in the XB 's which are transformed into δ in XD , each reaction being performed under the influence of one or more corresponding
- 10 chemical substances A_R , such chemical substances A_R including a chemical functionality α_R being involved in the transformation of the functionality/functionalities β to the functionality δ , said database comprising N sets of associated data, each of the N sets comprising
- 15 i) a set of reaction parameters for a chemical reaction involving the transformation of one or more functionalities $^N\beta$ of chemical species NB into $^N\delta$ in a product ND under the influence of one or more chemical substances NA , such chemical substance(s) each including a chemical functionality $^N\alpha$ being involved in the transformation of the functionality $^N\beta$ to the functionality $^N\delta$; and
- 20 ii) functional or structural information about the chemical species NB ;
- the method comprising that
- * the user provides information to the user interface of the parameter selection unit about the functionality/functionalities β in the chemical species XB ;
- 25 * the user provides information to the user interface of the parameter selection unit about the desired transformation of β to δ ;
- * the parameter selection unit retrieves R sets of associated data (Σ_R) from the database,
- 30 such sets of associated data being selected so that the functionality/functionalities $^N\beta$ in each set of associated data is/are essentially identical to the functionality/functionalities β in XB and the functionality $^{MN}\delta$ is essentially identical to δ in the product XD , in order to obtain the R sets of reaction parameters ($^X\Sigma_R$), said R sets of reaction parameters ($^X\Sigma_R$) being accompanied by corresponding information about the chemical substance(s) A_R

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under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

* an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s) A_R and the chemical species XB and any additional constituents required is prepared according to the sets of reaction parameters;

* each of the R reaction mixtures are treated in the apparatus in accordance with the corresponding set of reaction parameters.

2. A method according to claim 1, wherein the array of R reaction mixtures is provided from XB stock solution(s) and a kit comprising stock solutions of the chemical substance(s) A_R and any additional constituents required.

3. A method according to claim 1, wherein the R sets of reaction parameters involves the use of more than one chemical substance A_R .

4. A method according to claim 1, wherein the R sets of reaction parameters involves the use of R chemical substances A_R .

5. A method according to claim 1, in which the array of R reaction mixtures is prepared by combining the chemical species XB with the content of one or more of P containers each comprising a chemical substance A_R including a chemical functionality α_R which is intended to facilitate the transformation of a functionality β to a functionality δ in a chemical reaction involving a chemical species XB .

6. A method according to claim 1, wherein the R sets of reaction parameters are provided in the form of control parameters for the apparatus.

7. A method according to claim 1, wherein treatment of the R reactions is performed substantially simultaneously.

8. A method according to claim 1, wherein treatment of the R reactions is performed sequentially.

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9. A method according to claim 1, wherein the treatment includes heating.

10. A method according to claim 1, wherein the reaction is a microwave facilitated chemical reaction.

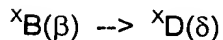
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11. A method according to claim 1, wherein the apparatus comprises a microwave reaction cavity.

12. A kit for use in the method defined in claim 1, said kit comprising P containers each
 10 comprising a chemical substance A_R including a chemical functionality α_R which is intended to facilitate the transformation of one or more functionalities β to a functionality δ in a chemical reaction involving one or more chemical species XB , said chemical reaction being intended to result in a reaction product XD which includes a functionality δ , where the chemical reaction involves one or more functionalities β in the XB 's which are
 15 transformed into δ in XD .

13. A kit according to claim 12, which further comprises additional constituents required for the transformation.

20 14. A system for conducting R chemical reactions of the type



involving one or more chemical species XB and resulting in a reaction product XD which
 25 includes a functionality δ , where the chemical reaction involves one or more functionalities β in the XB 's which is transformed into δ in XD , each reaction being performed under the influence of a corresponding chemical substance A_R , such chemical substances A_R including a chemical functionality α_R being involved in the transformation of the functionality/functionalities β to the functionality δ ,

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the system comprises

(a) an apparatus which provides energy for the chemical reactions, said apparatus comprising a reaction cavity and a liquid handler,

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(b) a parameter selecting unit having a user interface means, a search unit means, apparatus control unit means, and storage means for carrying a database, said database comprising N sets of associated data, each of the N sets comprising

- 5 i) a set of reaction parameters for a chemical reaction involving the transformation of a functionality ${}^N\beta$ of a chemical species NB into ${}^N\delta$ in a product ND under the influence of a chemical substance NA , such chemical substance including a chemical functionality ${}^N\alpha$ being involved in the transformation of the functionality ${}^N\beta$ to the functionality ${}^N\delta$; and
- 10 ii) functional or structural information about the chemical species NB .

15 15. A system according to claim 14, further comprising one or more disposable kits comprising P containers each comprising a chemical substance A_R including a chemical functionality α_R which is intended to facilitate the transformation of the functionality β to the functionality δ in the chemical reaction.

16. A computer readable data carrier loaded with a computer program system for facilitating the method defined in claim 1 in a system as defined in claim 14, said computer program system comprising:

20 * retrieving information via the user interface of the parameter selection unit about the functionality/functionality β in the chemical species XB ;

* retrieving information via the user interface of the parameter selection unit about the desired transformation of β to δ ;

25 * retrieving, via the parameter selection unit, R sets of associated data (Σ_R) from the database, such sets of associated data being selected so that the functionality/functionality ${}^N\beta$ in each set of associated data is/are essentially identical to the functionality/functionality β in XB and the functionality ${}^{MN}\delta$ is essentially identical to δ

30 in the product XD , in order to obtain the R sets of reaction parameters (${}^X\Sigma_R$), said R sets of reaction parameters (${}^X\Sigma_R$) being accompanied by corresponding information about the chemical substance(s) A_R under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

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* providing instructions to the liquid handler about the preparation of an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s) A_R and the chemical species XB and any additional constituents required according to the sets of reaction parameters;

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* providing instructions to the reaction cavity about treatment of each of the R reaction mixtures in the apparatus in accordance with the corresponding set of reaction parameters.

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